

REMARKS

In an office action dated 18 March 2002, the Examiner rejects claims 1-2, 4-6, and 8-10 (all pending claims). The Examiner also objects to claim 1. In response to the rejections and objections, Applicants amend claim 1 and respectfully traverse the rejections. In light of the amendments and the following argument, Applicants respectfully request that the Examiner allow claims 1-2, 4-6, and 8-10 (all pending claims).

In amendments, claim 1 is amended to correct the informalities cited by the Examiner. The Applicant has also amended claim 1 to recite "a pump proximate an edge of said base." Support for this amendment is shown in Figures 3,5,6, and 7. Applicant has also amended the specification to describe the pump located as shown. No new matter is entered as the added description is shown in the drawings. See MPEP §2163.06.


Claim 1 is rejected under 35 USC §102(e) as being anticipated by US Patent Number 6,019,065 issued to Batchelder (Batchelder). Amended claim 1 recites a pump proximate an edge of the base. Batchelder teaches a pump centrally located in a heat sink. See Figs. 5,6,7, and 8. The claimed pump of amended claim 1 has the advantage that the pump may be replaced without removing the heat sink. Therefore, amended claim 1 is not anticipated by Batchelder. Therefore, Applicants respectfully request that claim 1 be allowed.

Claims 2, 4-6, and 8-10 are dependent upon amended claim 1 and are allowable for at least the same reason as amended claim 1. Therefore, Applicants respectfully request claims 2, 4-6, and 8-10 be allowed.

If the Examiner has any questions regarding this amendment, the Examiner is invited to telephone the undersigned at 775-586-9500.

Respectfully submitted,
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MARKED UP VERSION

The following paragraphs provide the “As Amended” changes in a Marked-up format.

In the specification:

Please amend the paragraph beginning at page 9, line 1 as follows:

Referring now to FIG. 3, there is shown a cross-sectional view of heatsink 100. As shown in Fig. 3, base 130 further includes chamber 135 defined by a first surface 134 and a second surface 138. Chamber 135 is further defined by divider 155 disposed between first surface 134 and second surface 138 of chamber 135. Chamber 135 further includes pump 150, pump inlet 152 and pump outlet 154, cooling fluid 170, flow divider 160a through 160g, and fluid return apertures 165. In use, distal end 131 of base 130 of heatsink 100 is in contact with heat source H. As heat source H generates heat, heat is transferred through distal surface 131 to first surface 134 of heatsink 100 by conduction, heat within first surface 134 is transferred through convection to cooling fluid 170 that is in contact with first surface 134. Pump 150 is located at the edge of chamber 135 in base 130 and receives the cooling fluid. Cooling fluid 170 then enters pump intake 152 where pump 150 then pumps the cooling fluid 170 from first surface 134 of chamber 135 to first surface 161 of divider 155. As the cooling fluid 170 moves over the first surface 161 of divider 155 heat is transferred from the cooling fluid 170 to second surface 138 of chamber 135 and to fins 140. Cooling fluid 170 then is drawn through fluid return apertures 165 and back to first surface 134 of chamber 135 to repeat the process above. The process above is carried out so long as pump 150 is energized. In one embodiment, pump 150 is energized from a power source coupled to the heat source, thus when the

heat source is receiving power, pump 150 also receives power. Alternatively, pump 150 may be coupled to a temperature-sensing device, so that pump 150 is energized above a threshold temperature until a second lower temperature is reached.

Please amend the paragraph beginning at page 12, line 14 as follows:

As shown in FIG. 5, heatsink 500 pump 550 disposed adjacent to an edge of [to] base 530. Pump intake 554 is coupled to and in fluid communication with fluid outlet 531 and pump intake 552 is coupled to and in fluid communication with fluid inlet 533. The embodiment as shown in FIG. 5 allows pump [150] 550 to be replaced in the event of pump failure.

Please amend the paragraph beginning at page 13, line 4 as follows:

Referring now to FIG. 6 there is shown a second alternative embodiment of the present invention. As illustrate in Fig. 6 heatsink 600 comprises a base 630 and fins 640. Base 630 further includes a chamber defined by a first surface 634 and second surface 638. Chamber 635 further includes divider 655 and pump 650 disposed therein. Divider 655 being disposed adjacent to the first surface 631 of base 630. Pump 650 being disposed adjacent to an edge of base 630.

Please amend the paragraph at page 14, line 7 as follows:

Referring now to FIG. 7, there is shown a third alternative embodiment of the

present invention. Heatsink 700 as shown in FIG. 7 comprises a base 730, a plurality of fins 740 and a fan 790. Base 730 further includes a chamber 735 defined by a first surface 734 and a second surface 738. Chamber 735 further includes divider 755, cooling fluid 770 and pump 750 disposed therein. Divider 755 is disposed adjacent to first surface 734 of chamber 735. Pump 750 being disposed adjacent to an edge of chamber 735.

In the claims:

1. A device for the transfer of heat away from a heat source comprising:
 - a base having first and second surfaces;
 - a plurality of fins extending from said second surface of said base;
 - [said base further including] a chamber disposed between said first surface and said second surface of said base;
 - [Said chamber further including] a divider disposed within said chamber and adjacent said first surface;
 - [a pump coupled to said base; and]
 - a [cooling] cooling fluid disposed within said chamber[.];
 - a pump proximate an edge of said base;
 - an inlet of said pump being proximate said first surface of said base to receive said cooling fluid in said chamber that is proximate said first surface; and
 - an outlet of said pump that pumps said cooling fluid over a first surface of said divider.